



GENERAL MONITORS
Protection for life.

MODEL S4000T

Intelligent Sensor for H₂S Gas Detection



Features

- Three (3) Digit Digital Display
- 4-20mA Output
- Dual Redundant MODBUS Communications with three (3) discrete relays
- Calibration, Calibration Check, Setup Mode
- Remaining Sensor Life Indication
- Sensor can be remote mounted up to 3,700 ft. (1,125m)
- Wireless Capability

Benefits

- Displays gas concentrations in ppm, fault codes for troubleshooting and calibration prompts
- Industry standard output for remote alarm and fault indication
- Provides complete status and control capability in the Control Room
- Simplifies operation and maintenance
- Reduces downtime by providing “heads-up” on sensor life
- Increased installation flexibility
- Compatible with ELPRO Technologies wireless transmitters

Description

The Model S4000T Intelligent Sensor is a microprocessor-based transmitter designed for use with General Monitors' metal oxide semiconductor (MOS) sensor. This unit features one person calibration and can virtually self-calibrate by simply activating a magnetic switch and applying gas. It is designed to detect hydrogen sulfide in parts per million (ppm) levels and provide status indication and alarm outputs.

All of the S4000T electronics are contained within an explosion-proof housing so that sensor information can be processed at the sensor site. It provides a 4-20mA signal which is proportional to 0 to 100% of the detection range at the sensor. In addition, the S4000T includes warning, alarm and fault relay contacts that can be used to indicate an alarm or fault condition, and dual redundant MODBUS communications. Relays and MODBUS communications are optional offering choices to meet many needs.

The S4000T includes a three (3) digit digital display. This local digital display continuously indicates gas concentrations during normal operation and in the calibration check mode, calibration prompts during

calibration mode, display codes during the setup mode and eight fault codes.

The S4000T has four different operating modes. First, the normal operating mode in which alarms are active and the display and 4-20mA readings are proportional to the gas concentration at the sensor. Second, the calibration check mode that allows the user to apply a gas and check the sensor response while alarm outputs are inhibited. Third, a calibration mode in which gas is applied to the sensor to calibrate the unit. Finally, a setup mode which allows the user to review or change setup options such as relay settings, sensor range, and MODBUS parameters.

Selecting Setup Mode on the S4000T is accomplished by using the magnetic switch. Options include:

- Sensor Range (0-20 ppm, 0-50 ppm, 0-100 ppm)
- Energized/de-energized relays
- Latching/non-latching relays
- Alarm setpoints for relays
- Baud rate, data format, and address for each MODBUS channel



MODEL S4000T

System Specifications

Sensor Type: Continuous diffusion, adsorption type Metal Oxide Semiconductor (MOS)

Sensor Life: 3 to 5 years typical

Repeatability: ±2 ppm or 10% of the applied gas, whichever is greater

Response Time: T50<1 minute (screen)
T50<2 minutes (sintered) with full scale gas applied

Measuring Ranges: 0-20 ppm, 0-50 ppm, 0-100 ppm

Modes: Calibration, gas check, setup

Electrical Classification:

CSA/FM Class I, Division 1, Groups B, C & D; Class I, Zone 1, IIB+H₂, T6 (Tamb = -40°C to +60°C)

ATEX T6 EEx d IIB: (Tamb = -40°C to +40°C)

Warranty: Two years

Approvals: CSA, FM, ATEX, CE Marking. Complies with ISA-92.0.01, Part 1-1998 performance requirements. SIL 2/3 suitable

Environmental Specifications

Operating Temperature Range:

Electronics -40°F to 167°F (-40°C to 75°C)
Standard Sensor -40°F to 167°F (-40°C to 75°C)
High Temp Sensor -40°F to 195°F (-40°C to 90°C)

Storage Temperature Range: -58°F to 185°F (-50°C to 85°C)

Operating Humidity Range: 5% to 100% RH, non-condensing

Mechanical Specifications

Length: 6.4 inches (161mm)

Height: 3.4 inches (86mm)

Width: 4.1 inches (104mm)

Weight: 5.5 lbs. (2.5 kg)

Mounting Holes: 5.0 inches (127mm) (center to center)

Electrical Specifications

Input Power: 24 VDC nominal, 20 to 36 VDC 350mA max.

Relay Ratings: (optional) 8A @ 250 VAC / 8A @ 30 VDC res. max.
(3x) SPDT - Warning, Alarm & Fault

Analog Signal: 0-20mA (650 ohms max. load)
 Malfunction 0mA
 Gas Check 1.5mA
 Setup mode 1.5mA
 Zero reading 4mA±0.2mA
 0-100% scale 4-20mA
 Over-range 20-22mA

RFI/EMI Protection: Complies with EN50081-2, EN50082-2

Status Indicators: Three-digit digital display with gas concentration, Warn and Alarm LED's, calibration prompts, fault codes, and setup options

RS-485 Output: (optional) Dual redundant MODBUS RTU, suitable for linking up to 128 units or up to 247 units with repeaters

Baud Rate: 2400, 4800, 9600, or 19200 BPS

Faults Monitored: Open AO, calibration error, sensor heater error, low DC supply, EEPROM, EPROM, setup error, gas check time exceeded, switch error

Cable Requirements: 3 wire shielded cable. Max. distance between S4000T and power source or remote sensor @ 24 VDC nominal (20 ohm loop):
 14 AWG - 2000 ft. (610m)
 Max. distance for analog output (650 ohms max):
 14 AWG - 9000 ft. (2740m)

Wireless Communication: Available with ELPRO wireless transmitters

Standard Configuration: S4000T-1-0-01-1
 0-100 ppm, no relays

Specifications subject to change without notice.

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